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Application No.	10/612,602	Inventor(s):	Bailey et al.
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Title: ELECTRONICALLY CONTROLLED ELECTRIC MOTOR			
Examiner:	Masih, Karen	Art Unit:	2837

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APPEAL BRIEF (PURSUANT TO 37 CFR 41.37)

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Real Party in Interest

The real party in interest is Xidem, Inc., of Carthage, Texas.

Related Appeals and Interferences

There are no other prior or pending appeals, interferences, or judicial proceedings known to appellant, appellant's legal representatives, or assignee that may be related to, directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Thirteen claims were filed with the application; claim 14 was added and claim 6 was amended. Claims 1-14 are pending and stand twice rejected. The rejections of claims 1-14 are being appealed.

Status of Amendments

No amendments were filed after the latest rejection and before this Appeal Brief.

Summary of Claimed Subject Matter

The claimed invention comprises an improved system and method for controlling an electric motor.

In particular, claim 1 is directed to a system for controlling an electric motor, comprising: an encoder; a central processor in communication with said encoder; a module processor in communication with said central processor; and feedback circuitry in communication with said module processor.

Claim 1 is an original claim, so it provides its own support. Additional support may be found throughout the specification, especially at page 3, lines 1-10.

Claim 2 is directed to the system of claim 1, wherein the encoder is an electronic device that provides rotor and stator positional information to said central processor. Claim 2 is supported throughout the specification, especially at pages 10-14.

Claim 3 is directed to the system of claim 1, further comprising a user interface in communication with the central processor, wherein the user interface enables a user to select preferred operational parameters for an electric motor. Claim 3 is supported throughout the specification, especially at pages 10-14.

Claim 4 is directed to the system of claim 1, wherein the central processor receives rotor and stator positional information from the encoder and rpm values, and transmits differences in latency to said module processor. Claim 4 is supported throughout the specification, especially at pages 10-14.

Claim 5 is directed to the system of claim 1, wherein the module processor receives data from the central processor and, based on that data, controls one or more coils of an electric motor. Claim 5 is supported throughout the specification, especially at pages 10-14.

Claim 6 is directed to the system of claim 1, wherein the feedback circuitry receives data comprising temperature and individual coil conditions and transmits it to the module processor. Claim 6 is supported throughout the specification, especially at pages 10-15.

Claim 7 is directed to the system of claim 1, wherein the central processor comprises a field programmable gate array. Claim 7 is supported throughout the specification, especially at pages 10-15.

Claim 8 is directed to the system of claim 1, further comprising one or more H-bridge circuits in communication with the feedback circuitry. Claim 8 is supported throughout the specification, especially at pages 10-15.

Claims 2-5 and 7-8 are original claims, claim 6 has been amended by adding one word.

Claim 14 is directed to the system of claim 1, wherein said feedback circuitry receives data comprising temperature and coil conditions and transmits it to said module processor, said coil conditions comprising at least one of: coil position, coil angular velocity, and coil state. Claim 14 is supported throughout the specification, especially at pages 10-15.

Independent claim 9 is directed to a method for controlling an electric motor comprising: determining rotor position based on data received from an encoder; determining how to energize stator coils; directing a power module to provide appropriate current to appropriate coils; and monitoring rotor response.

Claim 9 is an original claim and therefore provides its own support. Claim 9 also is supported throughout the specification, especially at pages 10-15.

Claim 10 is directed to the method of claim 9, wherein the step of determining how to energize stator coils comprises consulting a look-up table. Claim 10 is supported throughout the specification, especially at pages 10-15.

Claim 11 is directed to the method of claim 9, wherein the step of determining how to energize stator coils comprises determining which coils to energize. Claim 11 is supported throughout the specification, especially at pages 10-15.

Claim 12 is directed to the method of claim 9, wherein said step of determining how to energize stator coils comprises determining which coils to energize at what times. Claim 12 is supported throughout the specification, especially at pages 10-15.

Claim 13 is directed to the method of claim 9, wherein said step of determining how to energize stator coils comprises determining which coils to energize with how much power. Claim 13 is supported throughout the specification, especially at pages 10-15.

Grounds of Rejection to Be Reviewed On Appeal

- (I) Whether grounds have been provided for the rejections of claim 10-13.
- (II) Whether the Examiner has improperly cited non-analogous references to reject claims 1-14.
- (III) Whether the examiner has misconstrued the Mackay patent (5,191,32) to reject claims 2-8 and 14.
- (IV) Whether the Examiner has cited proper motivations to combine multiple disparate references to reject claims 2-8 and 14.
- (V) Whether the Examiner has improperly dissected the claims into isolated words and phrases, and thus failed to consider the claimed invention as a whole.

Argument

(I) No Grounds Have Been Provided in Any Office Action for the Rejection of Claims 10-13

The Office Action (“Office Action”) being appealed rejects claims 10-13 as unpatentable over the combination of Stanton, Miyanari, and Hlavinka. But the limitations of those claims are not addressed in the Office Action, so a rejection of those claims is not supported. Even if independent claim 9 were unpatentable, that would not render dependent claims 10-13 unpatentable. The rejections of claims 10-13 is therefore improper and should be withdrawn.

A prima facie case of obviousness is not established when the cited references, when combined, fail to teach or suggest all of the claim limitations. See MPEP § 2142. No such case is established in the Office Action.

Claim 10 depends from, and this includes all of the limitations of, claim 9, and further requires the stator coils to be energized based on consulting a look-up table. This limitation is ignored by the present Office Action, and all previous office actions. The limitations of claims 11-13 have likewise been ignored. Since the limitations of these claims have not been found in the cited references, rejecting those claims over the cited references is improper.

(II) At Least the Labriola, Mackay, and Hlavinka References are Non-Analogous Art, and Thus Have Been Improperly Used to Reject Claims 1-14

Labriola is directed to a modular automatic analyzer. An electric motor is incidentally mentioned, but Labriola’s system is not in the electric motor field (see, e.g., abstract, and FIG. 1).

Mackay is directed to a variable scale input device, which is basically a belt 24 that a user can use to set various audio and video levels. The belt works a lot like a mouse wheel. Although

it has a “forced feedback motor/clutch” 28, that motor relates to movement of the belt. Thus, Mackay has nothing to do with electronically controlling electric motors – instead, it relates to a motor used to control a user input device. Again, an electric motor just happens to be mentioned.

Thus, neither Labriola nor Mackay is analogous art to claims 1-14.

Hlavinka is directed to a particle separation method and apparatus, and thus is totally unrelated to Applicants’ invention and the problem to which it is directed.

Moreover, the Examiner has ignored Applicants’ request to identify the specific field to which Applicants’ invention allegedly belongs (i.e., to identify analogous art) and to restrict cited references to that field. See MPEP § 2141.01(a) (Heading): “To rely on a reference under 35 U.S.C. 103, it must be analogous prior art.” See also MPEP § 2141.01(a), “Analogy in the Electrical Arts.” In the latest Office Action, the Examiner merely states: “In this case, it is the subject matter that is being taught that is similar.”

Applicants respectfully submit that this statement is not sufficient to qualify the above three references as analogous art – it only means that the Examiner dissected the claims into isolated phrases, then found references containing those phrases. It does not mean that one skilled in the field of electric motors would be aware of those references, or would be motivated to search for such references in order to solve the problem solved by the claimed invention.

(III) The Office Action Misconstrues the Mackay Patent (5,191,32) to Reject Claims 1-8 and 14

As discussed above, Mackay teaches nothing about controlling electric motors. The Office Action rejects claim 1 on the ground that “Mackay discloses encoder in communication with central processor, see fig 6 #56 and #52 as well as col 7 lines 5-10 and lines 50-60.”

But Fig. 6 #56 is an “I/O Circuit” – not an encoder (#52 is a CPU). Mackay does mention a rotary encoder 26, but that is not the sort of encoder required by claim 2, for example: “an electronic device that provides rotor and stator positional information to said central processor.” The rotary encoder 26 of Mackay merely sends signals that represent movement of the belt. See, for example, column 4, lines 23-30.

Thus, the Mackay reference has been radically misconstrued by the Examiner. Mackay has nothing to do with the claimed invention, and teaches none of the claimed limitations.

(IV) The Office Action Fails to Provide a Proper Motivation to Combine the Cited References to Reject Claims 2-8 and 14

The Office Action relies upon six different references (Labriola, Mackay, Stanton, Giacomini, Miyanari, and Grundmann) to reject claims 2-8 and 14. The only apparent motivation to combine those references was to reject those claims – in other words, the claims have improperly been used as a roadmap to combine the references.

A different set of five references (Labriola, Galecki, Stanton, Giacomini, and Miyanari) was used to reject claims 2-8 and 14 in a previous office action. In the first appeal brief, Applicants argued that those references were improperly combined.

The Office Action responded to that argument by arguing that one skilled in the art would be motivated to combine those five disparate and in some cases non-analogous references “for improved control.” See page 3, line 5 of the April 11, 2005 office action. That office action provided the same motivation (“improved control”) for combining Stanton with Miyanari and Hlavinka. See page 3, final line.

In response to the arguments made by Applicants in the first appeal brief, the pending Office Action now argues that one skilled in the art would be motivated to combine the new

combination of six references, two of which (Mackay and Grundmann) are newly-cited, “for improved control.”

This is a clear indication that the only reason these references are being combined in various permutations is to reject the claims – i.e., the claims are improperly being used as a roadmap to combine references. Clearly, even assuming that the Examiner’s position is correct, one skilled in the art seeking “improved control” would only be motivated to try various combinations of the teachings of the six cited references (since that is what the Examiner has done over the course of the present examination process). But if the same “motivation” would only motivate one of ordinary skill in the art to try various combinations of references, then no particular combination can be obvious – and neither can the claims that were used to find those combinations.

Consequently, the cited references are improperly combined and used to reject the claims, and the rejections based on those combinations should be withdrawn.

(V) The Office Action Fails to Consider the Claimed Invention as a Whole

MPEP requires an Examiner to consider the claimed invention as a whole, and to refrain from dissecting the claims into isolated words and phrases. “In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious.”

The claimed invention is directed to an improved method of controlling an electric motor. In various claimed embodiments, the improvements include feedback circuitry that helps control a motor based on stator and positional information, rpm values, temperature and individual coil conditions. The individual coil conditions comprise one or more of coil position, coil angular

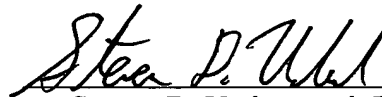
velocity, and coil state. In one claimed embodiment, an H-bridge circuit in communication with the feedback circuitry is used.

The claimed invention requires the above components to be used in conjunction, to control an electric motor. The Examiner, however, ignores the invention as a whole, and rejects the claims because individual claim terms can be found in various disparate prior art references. Not only is this approach improper according to the MPEP - it is improper on its face: no claim could survive this approach. *Any claim can be decomposed into individual words and phrases that can be found in the prior art.* That is precisely why examiners are required to consider each claim as a whole, to only combine references when a suggestion for that particular combination can be found in the prior art, and to only seek to combine analogous references. The Office Action ignores the first requirement and only pays lip service to the latter two.

The fee for filing this Appeal Brief was already paid on January 12, 2006, when the first Appeal Brief was filed. However, if any fees are due, please charge such fees to Deposit Account No. 50-0310.

Dated: February 12, 2007

Respectfully submitted,



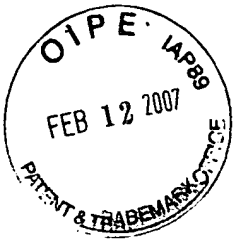
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Claims Appendix

1. A system for controlling an electric motor, comprising:
an encoder;
a central processor in communication with said encoder;
a module processor in communication with said central processor; and
feedback circuitry in communication with said module processor.
2. A system as in claim 1, wherein said encoder is an electronic device that provides rotor and stator positional information to said central processor.
3. A system as in claim 1, further comprising a user interface in communication with said central processor, wherein said user interface enables a user to select preferred operational parameters for an electric motor.
4. A system as in claim 1, wherein said central processor receives rotor and stator positional information from said encoder and rpm values, and transmits differences in latency to said module processor.
5. A system as in claim 1, wherein said module processor receives data from said central processor and, based on said data, controls one or more coils of an electric motor.
6. A system as in claim 1, wherein said feedback circuitry receives data comprising temperature and individual coil conditions and transmits it to said module processor.
7. A system as in claim 1, wherein said central processor comprises a field programmable gate array.
8. A system as in claim 1, further comprising one or more H-bridge circuits in communication with said feedback circuitry.

9. A method for controlling an electric motor, comprising:
determining rotor position based on data received from an encoder;
determining how to energize stator coils;
directing a power module to provide appropriate current to appropriate coils; and
monitoring rotor response.

10. A method as in claim 9, wherein said step of determining how to energize stator coils comprises consulting a look-up table.

11. A method as in claim 9, wherein said step of determining how to energize stator coils comprises determining which coils to energize.

12. A method as in claim 9, wherein said step of determining how to energize stator coils comprises determining which coils to energize at what times.

13. A method as in claim 9, wherein said step of determining how to energize stator coils comprises determining which coils to energize with how much power.

14. A system as in claim 1, wherein said feedback circuitry receives data comprising temperature and coil conditions and transmits it to said module processor, said coil conditions comprising at least one of: coil position, coil angular velocity, and coil state.

Evidence Appendix

None.

Related Proceedings Appendix

None.